Figure 1: Partitioned Host System
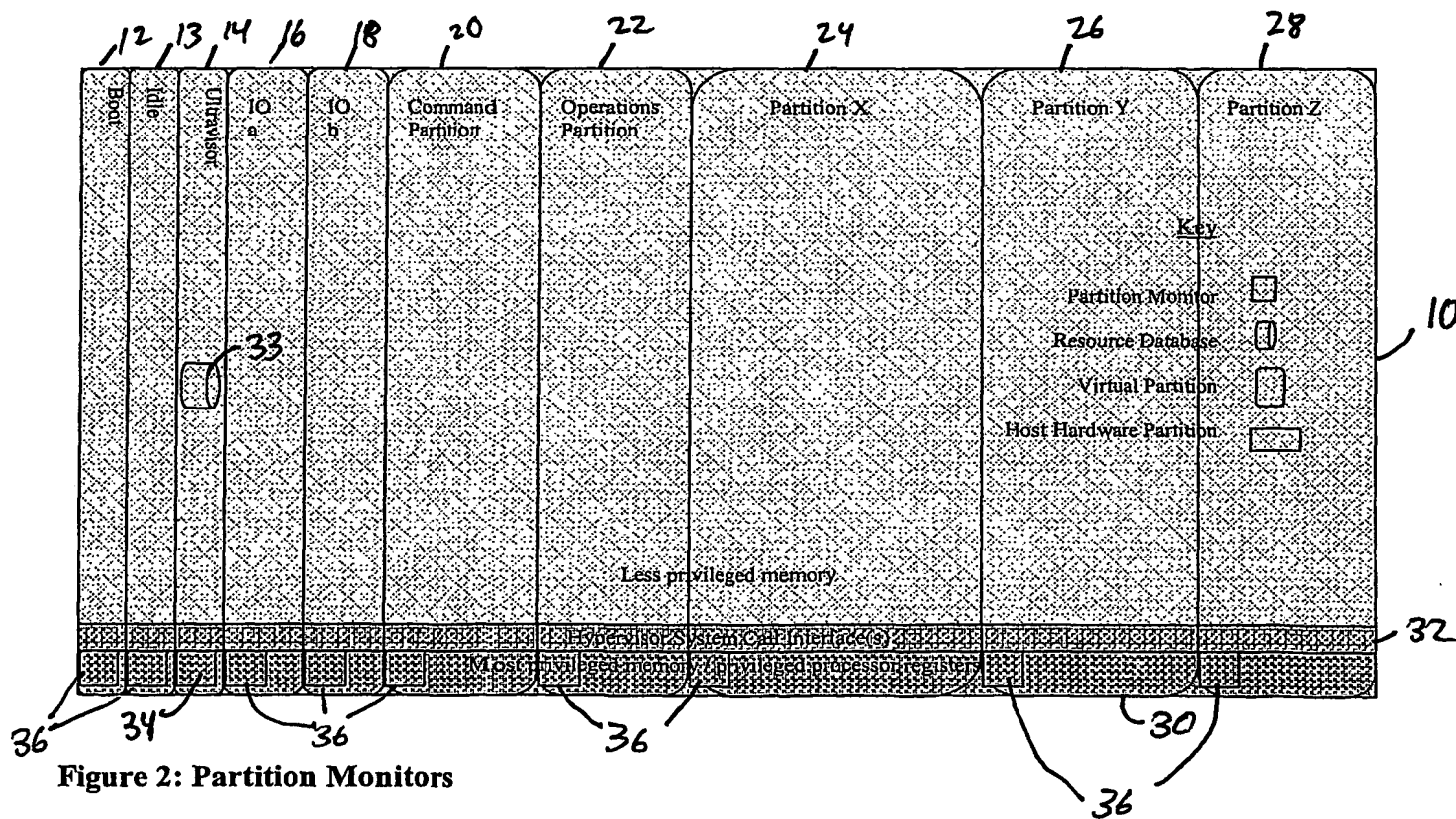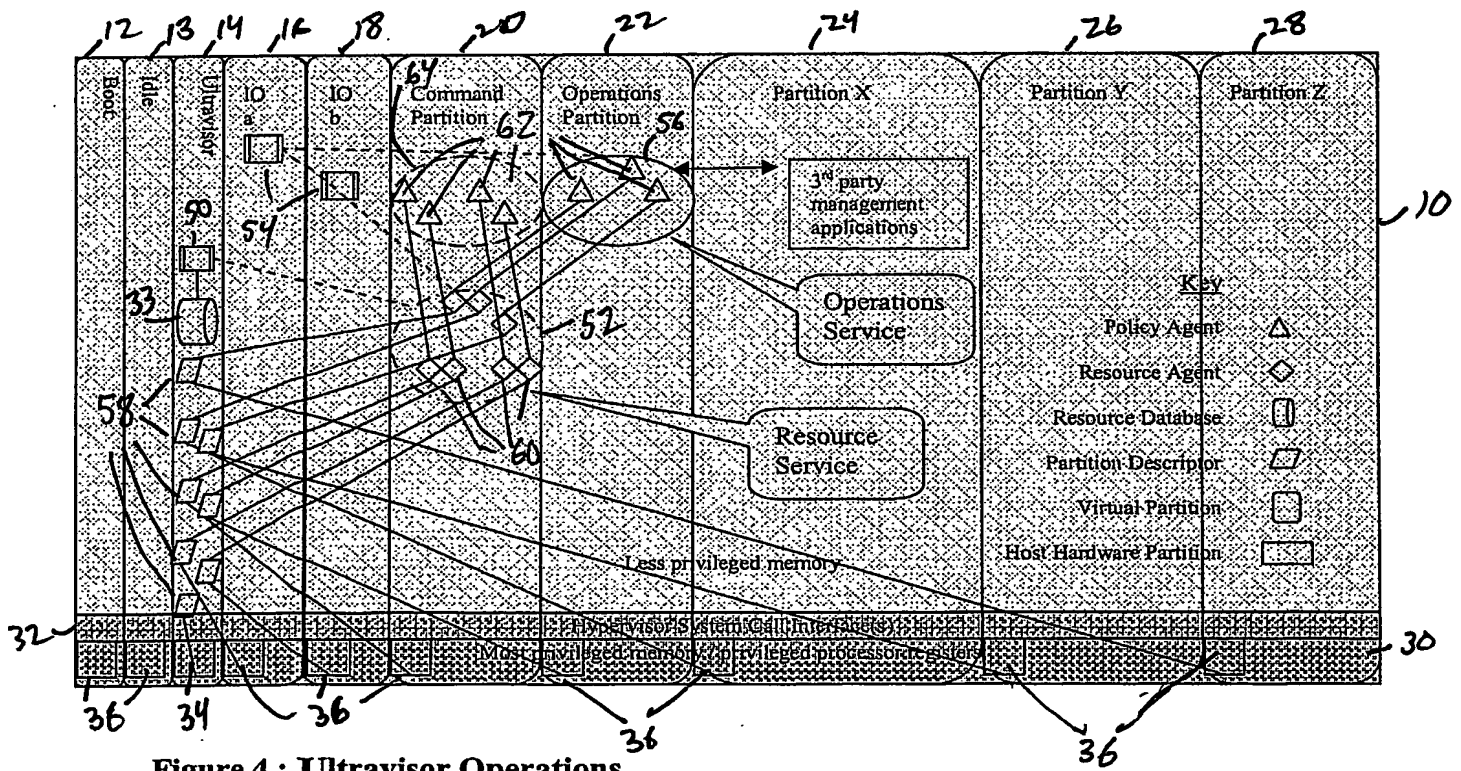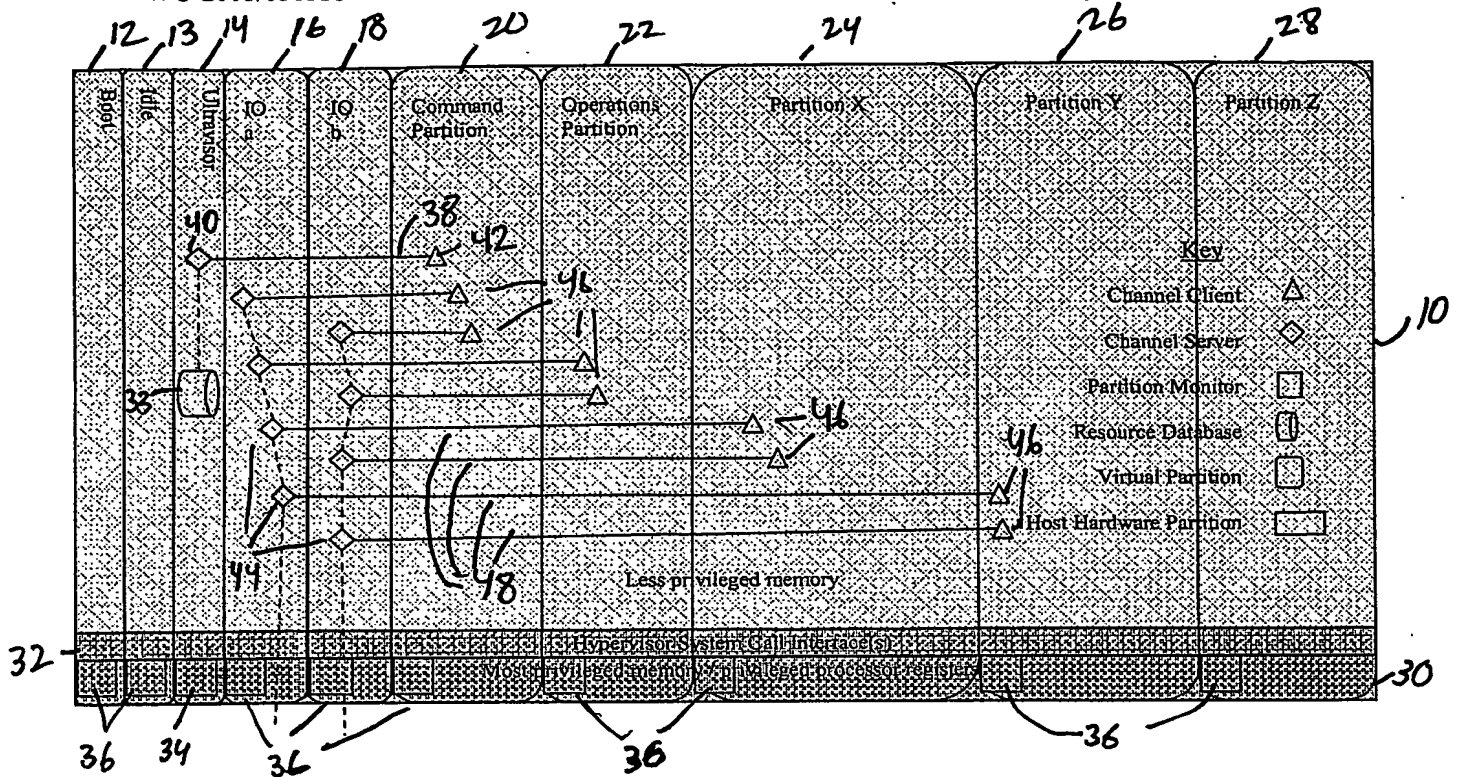

Figure 2: Partition Monitors

Figure 3: **Partition Channels**

Figure 4 : **Ultravisor Operations**

Overlapped processor throttling – default 4 bit duty width (1/16 = 6.25%)

Figure 5 : Processor Sharing

Figure 6 : Processor Schedule

$(2^{10})^n$	SI prefix	SI name	Page Table	Pageantry	IA32/EM32T
1	K	kilo	PKM	PKE	PT/PTE
2	M	mega	PMM	PME	PD/PDE
3	G	giga	PGM	PGE	PDP
4	T	tera	PTM	PTE	PML4
5	P	peta	PPM	PPE	
6	E	Exa	PEM	PEE	
7	Z	zetta	PZM	PZE	
8	Y	yotta	PYM	PYE	

Figure 7 : SI Prefixes for Page Table Hierarchy

Function GetMemoryOwner [T : 0..1023, G:0..1023, M:0..1023, K:0..1023] of Int32

Memory Index Ref	1		GB	MB	KB

Partition number (32 bits)	0	S	Node (GB)	MB	KB

PGM: T=0 G=x

```
0: [-,0,1,1]
1: [0,1,25]
2: [0,1,20]
...
14: [0,1,20
15: [-,0,1,16]
16: [0,1,19]
...
1023 [0,1,19]
```
Mem[0,1,0]

PMM: T=0 G=0 M=x

```
0: [0,1,22]
1: [-,0,1,18]
2: [0,1,24]
3: [0,1,20]
...
767: [0,1,20]
768: [0,1,26]
...
1023 [0,1,26]
```
Mem[0,1,1]

PMM: T=0 G=15 M=x

```
0: [0,1,20]
...
1023: [0,1,20]

— redundant
```
Mem[0,1,16]

PKM: G=0 M=1 K=x

```
0: [0,1,24]
1: [0,1,24]
...
23: [0,1,24]
24: [0,1,24]
25: [0,1,25]
26: [0,1,26]
27: [0,1,20]
1023: [0,1,20]
```
Mem[0,1,18]

Ultravisor Index

```
Type: Index
MapHigh [0,0,0]
MapLow [0,1,0]
MapOrder 3
Index [0,1,23]
Hyper [0,1,24]
Avail: [0,1,20]
```
Mem[0,1,23]

Ultravisor Partition

```
Type: Partition
Id: Ultra
Me: [0,1,24]
3.9MB
[0,2,x]
```
Mem[0,1,24]

Partition X

```
Type: Partition
Id: UserX
Me: [0,1,25]
4GB [1,x,x]
{4-7 GB}
```
Mem[0,1,25]

Partition Y

```
Type: Partition
Id: UserY
Me: [0,1,26]
1GB
[0,768,x] –
[0,1023,x]
```
Mem[0,1,26]

Partition Missing

```
Type: Partition
Id: Missing
Me: [0,1,19]
3.9375TB
{64GB-4TB}
```
Mem[0,1,19]

Partition Available

```
Type: Partition
Id: Available
Me: [0,1,20]
58.9GB
{8-64GB}
```
Mem[0,1,20]

Partition Idle

```
Type: Partition
Id: Idle
Me: [0,1,21]
64KB
<not shown>
```
Mem[0,1,21]

Partition Boot

```
Type: Partition
Id: Boot
Me: [0,1,22]
4MB
[0,0,0] –
[0,0,1023]
```
Mem[0,1,22]

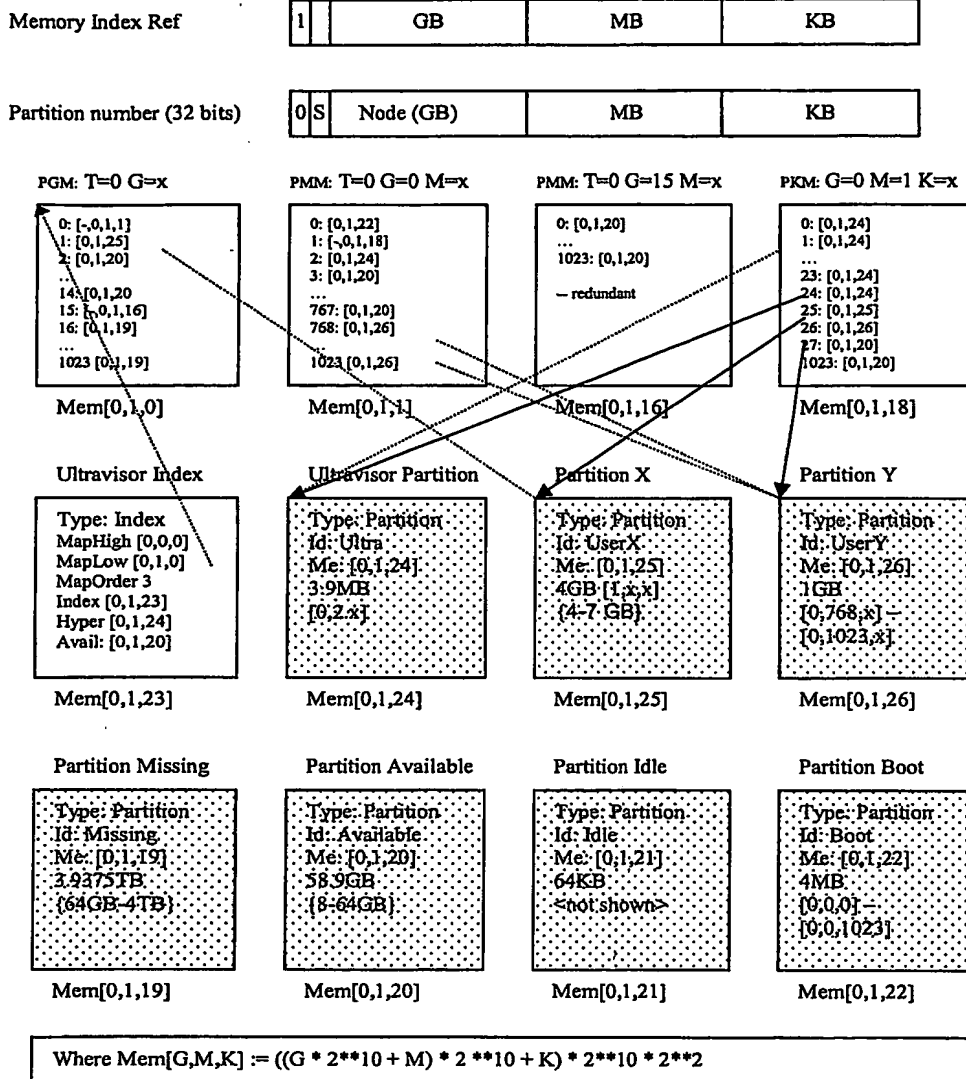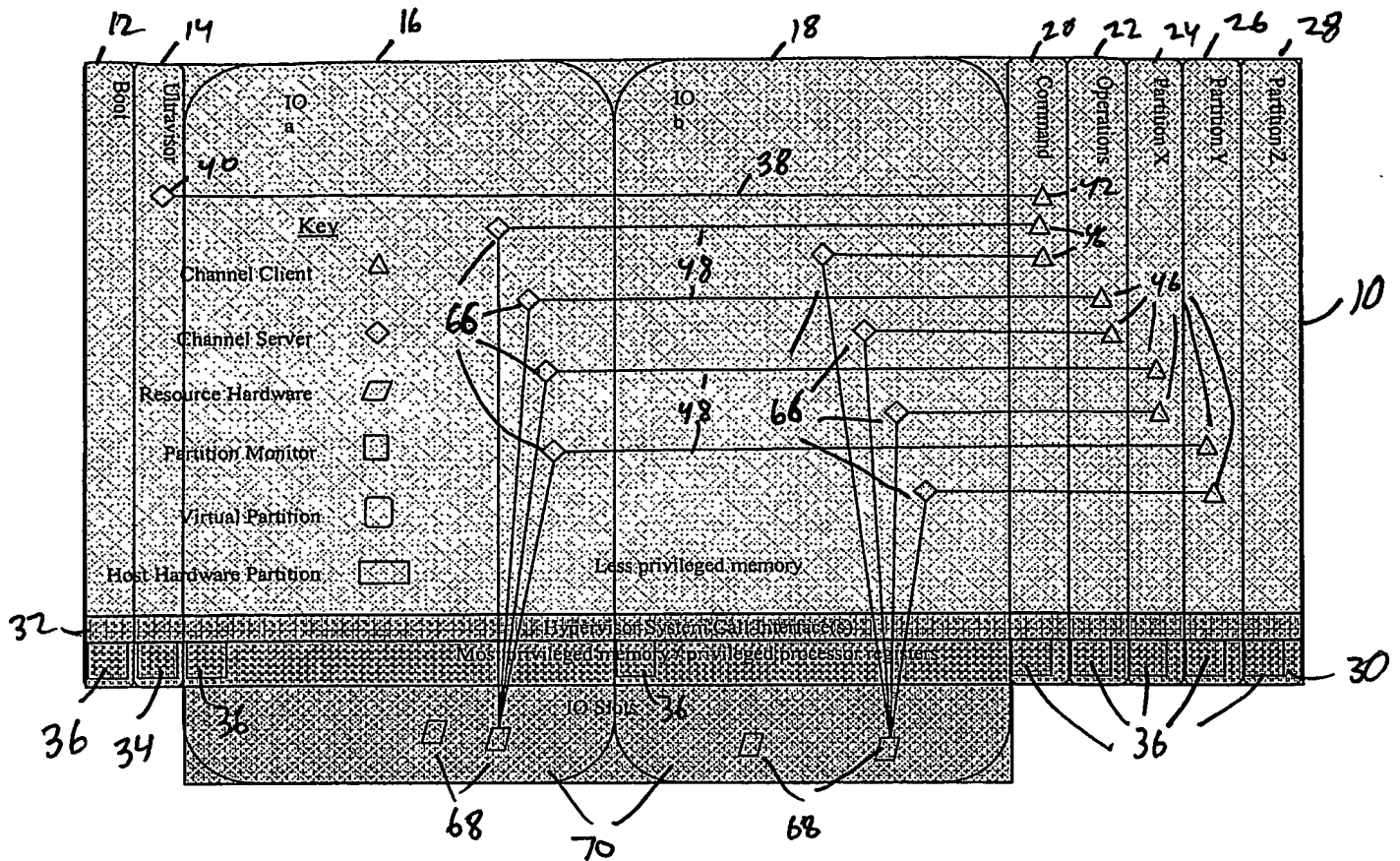Where Mem[G,M,K] := ((G * 2**10 + M) * 2 **10 + K) * 2**10 * 2**2

Figure 8 : Partition Memory Map
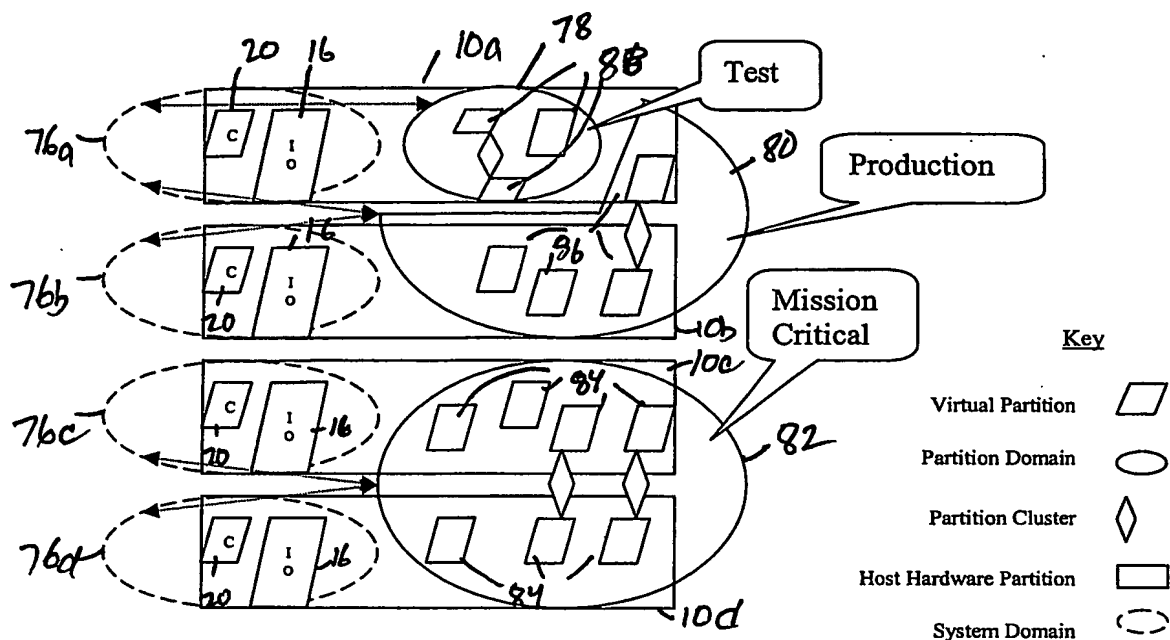
Figure 9: Internal I/O
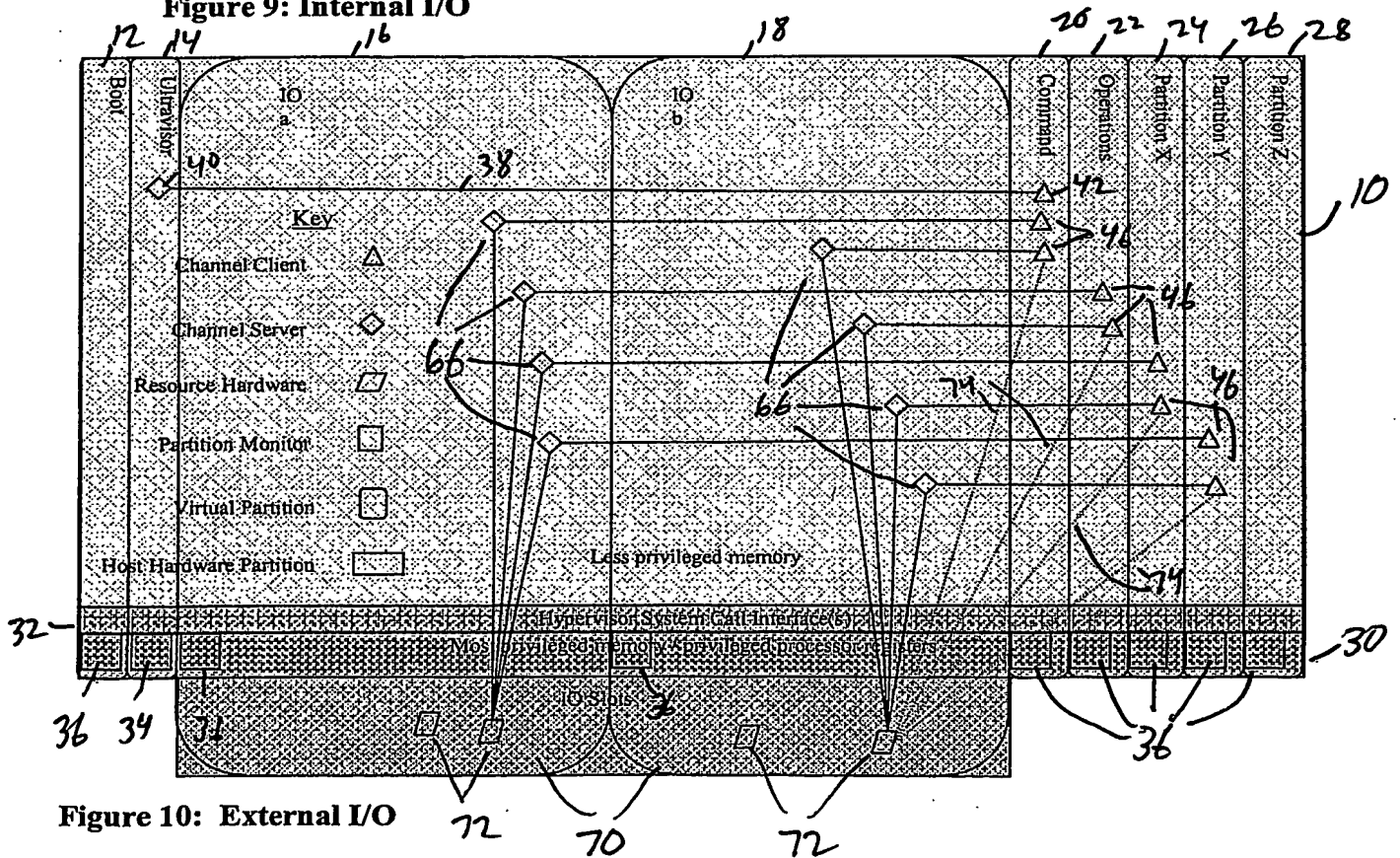
Figure 10: External I/O
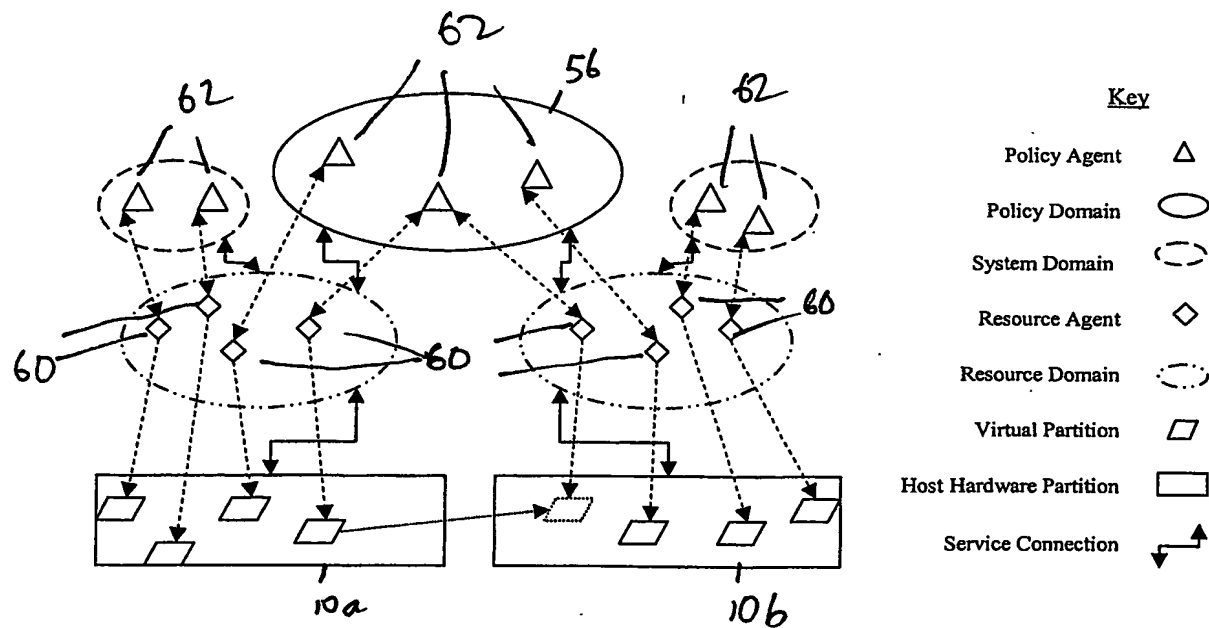
Figure 11 : Ultravisor Domains

Key

Virtual Partition ▱

Partition Domain ◯

Partition Cluster ◇

Host Hardware Partition ▭

System Domain ⊂ ⊃

Figure 12 : Ultravisor Partition Agents

Key

Policy Agent △

Policy Domain ◯

System Domain ⊂ ⊃

Resource Agent ◇

Resource Domain ⊂ ⊃

Virtual Partition ▱

Host Hardware Partition ▭

Service Connection
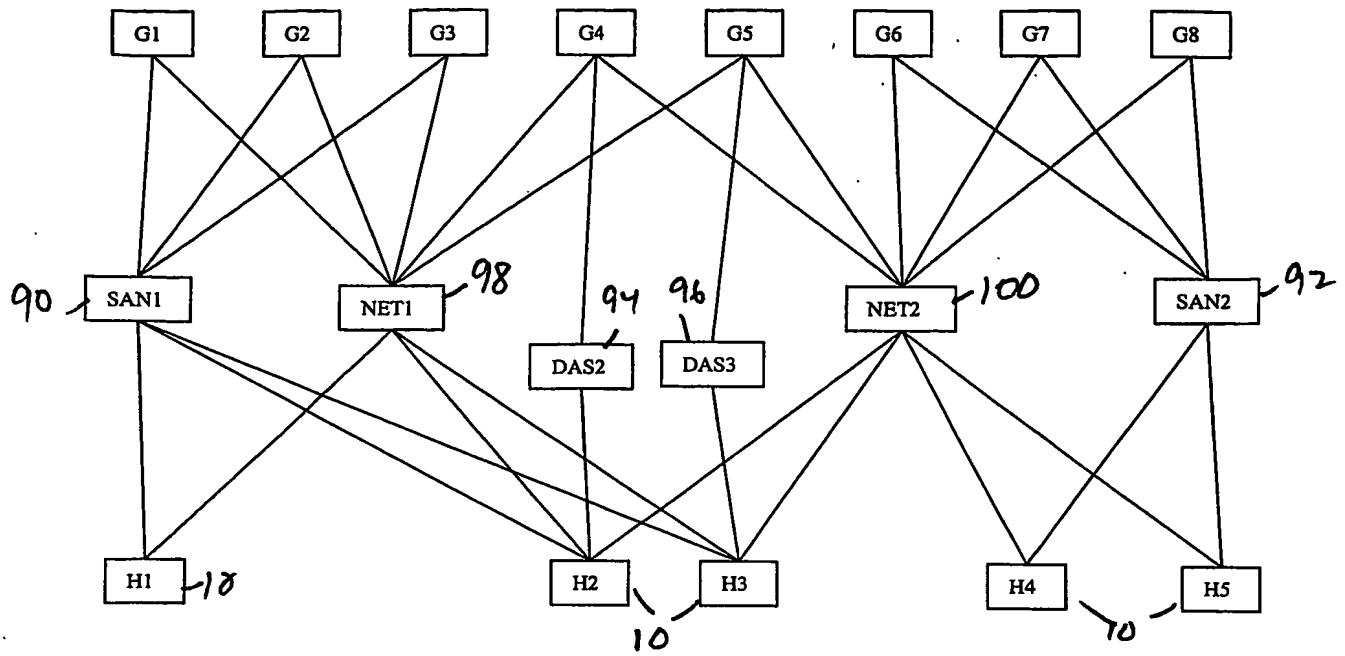
Figure 13 : Virtual Data Center Zones
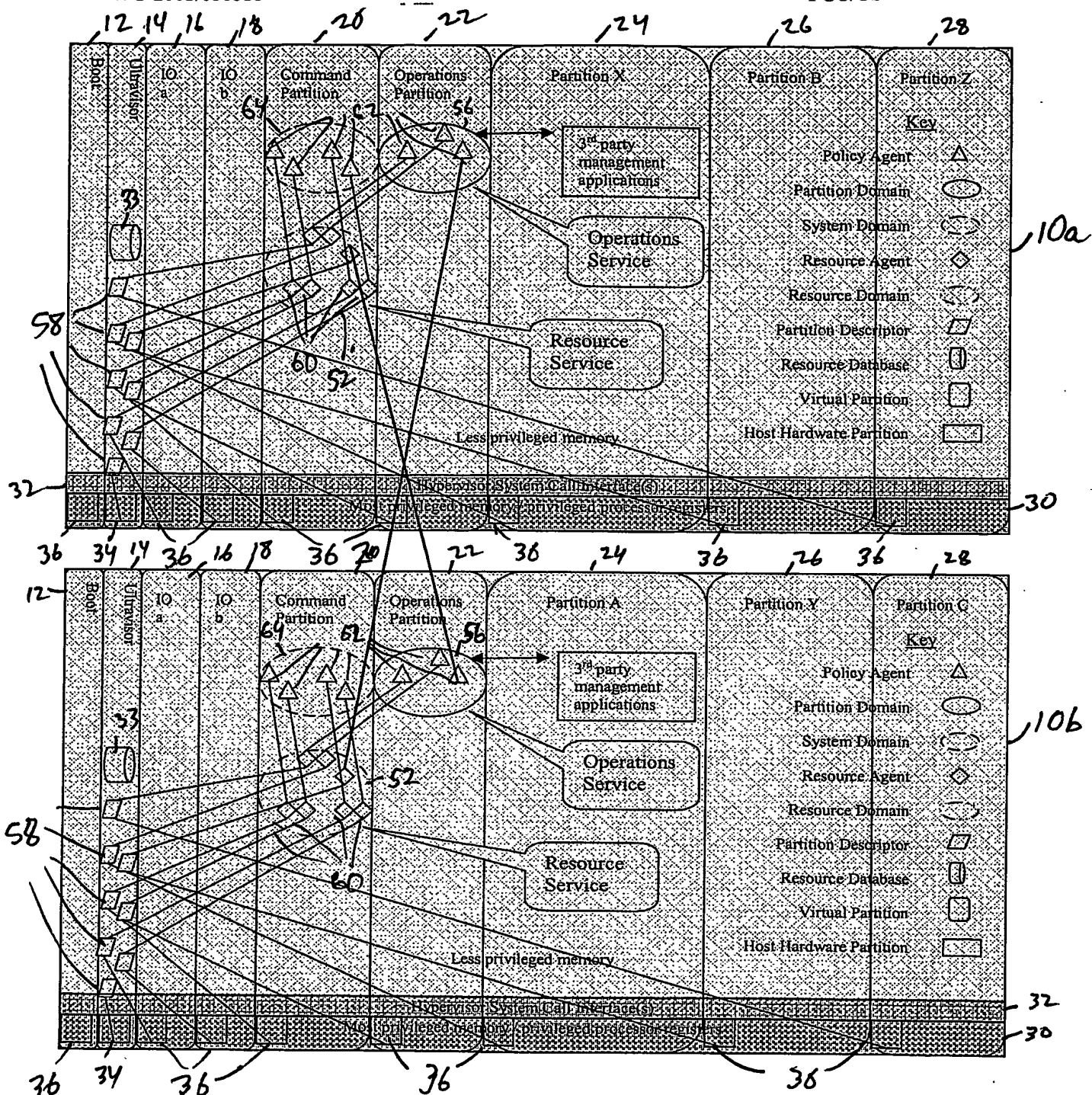
Figure 14 : Data Center/Multiple Hosts

Figure 15: Multiple Ultravisor Resource Partitions